

## A REVISION OF *MELALEUCA* L. (MYRTACEAE) IN NORTHERN AND EASTERN AUSTRALIA, 2.

by N.B. Byrnes

formerly Queensland Herbarium, Brisbane.

### Summary

*Melaleuca acacioides* F. Muell., *M. acuminata* F. Muell., *M. angustifolia* Gaertner, *M. arnhemica* Byrnes, *M. brassii* Byrnes, *M. cheelii* C. White, *M. biconvexa* Byrnes, *M. cornucopiae* Byrnes, *M. decussata* R.Br., *M. densispicata* Byrnes, *M. gibbosa* Labill., *M. glomerata* F. Muell., *M. halmatorum* F. Muell. ex Miq., *M. hypericifolia* Smith, *M. lasiandra* F. Muell., *M. linariifolia* Smith, *M. magnifica* Specht, *M. neglecta* Ewart & Wood, *M. nodosa* (Gaertner) Smith, *M. squarrosa* Donn ex Smith, *M. symphyocarpa* F. Muell., *M. thymifolia* Smith, *M. tortifolia* Byrnes, *M. uncinata* R.Br. and *M. wilsonii* F. Muell. are described and maps of their distributions are given.

This paper is the second of a series. The first was published in *Austrobaileya* 2: 65-76 (1984). Detailed descriptions of some species whose names were validated in the first part are given here. The map numbers correspond to the species numbers.

7. *Melaleuca hypericifolia* Smith, Trans. Linn. Soc. Lond. 3: 279 (1797); Benth., Fl. Austr. 3: 131 (1867). **Type:** N.S.W.: Governor A. Phillip per H. Banks, in Smith Herb (BM).

Shrub to 6 m high. Bark layered, hard or somewhat papery. Branchlets pilose, glabrescent, angular. Leaves opposite, decussate, biconvex or flat, narrowly elliptical to obovate, obtuse or acute, cuneate at base, 10-40 mm long, 4-10 mm wide, glabrous, 3-veined with reticulum visible at least below, oil glands visible below; petiole ca 1 mm long. Inflorescence a many-flowered, dense, axillary spike; flowers single within each bract; rachis pubescent, elongating usually after anthesis; bracts ovate to triangular to 10 mm long, deciduous; bracteoles absent. Calyx tube campanulate, broadening at base along stem axis, ca 2 mm long and wide, glabrous; lobes semi-elliptical, about 2 mm long, with hyaline margins, glabrous. Petals red, broadly elliptical, claw usually absent, about 5 mm long, distinctly punctate. Stamens red, glabrous; claw 12-16 mm long; filaments 16-20 attached to margin near apex of each claw, free part to 14 mm long. Style 22-26 mm long, glabrous; stigma small. Ovary ca 2 mm long, tomentose above. Fruit broadly ovate to campanulate, to 7 mm long and 9 mm wide, orifice about 5 mm diam., calyx lobes persistent, woody; usually in a dense spike.

New South Wales, south of Hunter River to near Bega. Commonly cultivated.

**Selected specimens.** New South Wales: Newport, Dec 1935, *White* 10315 (BRI); The Gib, near Bowral, Jan 1962, C. Burgess (BRI); roadside between Kioloa & Bawley Pt, Nov 1964, *Walker* 1352 (NSW, CANB).

8. *Melaleuca linariifolia* Smith, Trans. Linn. Soc. 3: 278 (1797); Benth., Fl. Austr. 3: 141 (1867); Carrick & Chorney, J. Adelaide Bot. Gard. 1(5): 298, f.12 (1979). **Type:** Cultivated in Cambridge, England, from seed from "Port Jackson", N.S.W.  
*M. trichostachya* Lindley in Mitchell, J. Trop. Aust. 277 (1848). **Type:** Queensland: Belyando River, in 1846, *Mitchell* (NSW).  
*M. stricta* Dum. Cours., Bot. Cult. ed. 2, 5: 375 (1811), fide Jackson, Ind. Kew. 2: 188 (1895), *nomen nudum*.  
*Metrosideros hyssopifolia* Cav., Icon. 4: 20, t.336 (1797).

Shrub or small tree to 10 m high. Bark layered, papery. Branchlets pubescent, glabrescent. Leaves opposite or subopposite, flat commonly concave above, linear or narrowly elliptical, acute, apiculate, cuneate at base, 10-30 mm long, 1-3 mm wide, pubescent soon glabrescent, 3-veined, midvein usually visible, oil glands sometimes visible; petioles absent or very short. Inflorescence a many-flowered, usually open terminal or subterminal spike; flowers usually opposite, solitary within each bract; rachis glabrous or pubescent, growing out about anthesis; bracts variable, short and ovate to leaflike, mostly deciduous; bracteoles minute, scale-like to ovate, about 1.5 mm long. Calyx tube turbinate or hemispherical, 1.5-2 mm long, glabrous; lobes semicircular to triangular, 1-2 mm long without distinct hyaline margins, glabrous.

Petals white, broadly elliptical to nearly circular, with a short narrow claw, 2–3 mm long. Stamens white, glabrous; claw 4–15 mm long; filaments 30–60 attached to margin and some on inner surface of upper two-thirds of each claw, free part to 3 mm long. Style 4–7 mm long, glabrous; stigma capitate. Ovary 1–1.5 mm long, pubescent above. Fruit turbinate or cylindrical, 2.5–3.5 mm long and wide, orifice 2–3 mm diam.; valves included or exerted; usually in an open spike.

Queensland, New South Wales, Northern Territory and north-eastern South Australia.

*Melaleuca linariifolia* exhibits a wide range of variation in leaf size, bract shape and size, staminal-claw length, distinctness of leaf venation, oil gland size, fruit shape and the degree to which the valves are exerted in the fruit. These characters are often grouped so that many populations have short leaves and staminal claws, turbinate fruit with exerted valves and obscure venation and oil glands, while others have long leaves and staminal claws, cylindrical fruit with included valves and distinct venation and oil glands. These populations are so distinct that they have been considered two species, *M. trichostachya* for those with the former set of attributes and *M. linariifolia* for the latter. However there is a continuum between these populations with many examples of variation in combination of the characters listed above. Consequently some specimens cannot be referred satisfactorily to either species. Bentham reduced *M. trichostachya* to a variety of *M. linariifolia*. From determinations on herbarium sheets and literature, indications are that some botanists favour the concept of two species while others, including S.T. Blake, appear to have regarded all material as a single entity. Bentham's interpretation is followed here as being the most practical solution in dealing with the complex group.

Of the characters separating the two varieties the length of the staminal claw is the most consistent. Leaf size is very variable but fruit shape and disposition of the valves can be useful. Carrick & Chorney listed bract width as a possible diagnostic character but from examination of many specimens, this was found to be variable and seldom of use as in most cases the bracts are deciduous.

**Melaleuca linariifolia** var. **linariifolia** is more common in eastern New South Wales but extends to the south-eastern coastal area of Queensland and to the Blackdown Tableland.

**Selected specimens.** Queensland: Moreton District: near Salisbury, Oct 1930, *Hubbard* 4679 (BRI). New South Wales: Port Macquarie, Nov 1915, *Boorman* (BRI, NSW); Tascott, near Gosford, Nov 1952, *J. King* (BRI).

**Melaleuca linariifolia** var. **trichostachya** (Lindley) Benth., Fl. Austr. 3: 141 (1867). Based on *M. trichostachya* Lindley.

This is the more widely distributed variety in Queensland but extends into western New South Wales and Northern Territory.

**Selected specimens.** Northern Territory: Standley Chasm, Alice Springs, Nov 1956, *Forde* 689 (BRI). Queensland: Gregory North District: Mort River Crossing, 5 km NE of Digby Peaks, Sep 1977, *Purdie* 1044 (BRI). Cook District: 8–9 miles north of Stannary Hills, Oct 1971, *Irvine* 83 (BRI). Wide Bay District: Dallarnil, Dec 1939, *Smith* 623 (BRI).

9. **Melaleuca squarrosa** Donn ex Smith, Trans. Linn. Soc. 6: 300 (1802); Benth., Fl. Austr. 3: 139 (1867); Carrick & Chorney, J. Adelaide Bot. Gard. 1, 5: 310, f.19 (1979). **Type:** cultivated in Cambridge, England by Donn from seed from Port Jackson (BM). *M. myrtifolia* Vent., Jard. Malm. 1: 47, t.47 (1804). **Type:** Cultivated in France from seed from "Iles de la Mer Du Sud".

Shrub or small tree to 15 m high. Bark layered, papery. Branchlets glabrous or pubescent to villous, glabrescent. Leaves opposite or subopposite, decussate, flat, ovate to very broadly ovate, acute to acuminate, almost pungent, broadly attenuate to cordate at base, 5–15 mm long, 4–7 mm wide, glabrous or pubescent to villous, glabrescent, with 5–7 veins usually visible, oil glands visible with lens; petioles ca 1 mm long, glabrescent. Inflorescence a many-flowered, usually dense terminal spike; flowers mostly in triads; rachis villous, growing out after anthesis; bracts leaflike, semipersistent; bracteoles rarely present, small, caducous. Calyx tube turbinate to truncate ellipsoid, 1.5–2 mm long, glabrous to villous; calyx lobes ovate to semicircular, to 1 mm long, herbaceous. Petals white or tinged pink, ovate to nearly circular with short claw, 1.5–2 mm long. Stamens white or pale yellow, thinly pilose towards base; claw 0.5–2 mm



long; filaments 6–12 attached to margin near apex of each claw; free part to 6 mm long. Style 6–10 mm long (absent in male flowers), glabrous; stigma small. Ovary about 1 mm long, pubescent above. Fruit cup-shaped, *ca* 4 mm long and wide, orifice *ca* 3 mm diam.; calyx lobes absent; in dense spikes.

South-eastern and southern Australia from Sydney to Kangaroo Island and Tasmania, in coastal districts and adjoining ranges.

**Selected specimens.** New South Wales: Campbelltown, *Atkin* (BRI); Carrington Falls, Robertson District, Jan 1961, *Pullen* 2515 (BRI, CANB). Victoria: Halls Gap, Grampian Mts, Oct 1912, *Audas* (BRI). Tasmania: Henty River, 12 miles N of Stratham, Nov 1965, *Phillips* 15185 (BRI).

- 10. *Melaleuca biconvexa*** Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** 6 miles [10 km] NW of Morriset, New South Wales, Sep 1959, *Story* 6681 (NSW, holo; BRI, iso).  
*M. pauciflora* auct. non Turcz.; Benth., *Fl. Austr.* 3: 139 (1867).

Shrub or small tree to 10 m high. Bark layered, papery. Branchlets villous, glabrescent. Leaves opposite, channelled above, keeled below, convex above on each side of midvein, broadly to narrowly ovate, acute, sometimes apiculate, shortly cuneate at base, 7–18 mm long, 2–4 mm wide, villous, soon glabrescent, 1–3 (rarely 5)-veined, midvein conspicuous, oil glands visible with lens; petiole to 1 mm long. Inflorescence a few-flowered dense, terminal head or short spike, flowers single within each bract; rachis shortly pubescent, growing out after anthesis; bracts ovate, to 3 mm long, thinly pubescent; bracteoles absent. Calyx tube campanulate, about 2 mm long, glabrous or puberulous; lobes ovate to triangular, 1–1.5 mm long, glabrous with narrow margins. Petals broadly ovate to nearly circular with distinct narrow claw, 5–6 mm long. Stamens white or pale yellow, glabrous; claw 1–2 mm long; filaments 15–20 attached to upper margin to each claw, free part to 6 mm long. Style 10–12 mm long (absent in male flowers) pubescent or thinly puberulous; stigma capitate. Ovary 1.5–2 mm long, pubescent above. Fruit campanulate to urceolate, 4–5 mm long and wide including the persistent calyx lobes, orifice 2–3 mm diam.; single or few together in clusters.

New South Wales in coastal areas and adjacent tablelands from the Hunter River to Jervis Bay.

**Selected specimens.** New South Wales: Swampy Creek, Huskisson Rd, near Naval College turnoff, Sep 1928, *Rodway* 3309, 3310 (NSW); Gosford, Oct 1888, *Deane* (NSW) & *Fletcher* (NSW); Ourimbah to Berkley Vale, Oct 1953, *Salasoo* (NSW); Narara, Oct 1960, *McG.* 1010 (NSW); Tuggerah, Sep 1903, *Boorman* (NSW).

Turczaninow described *M. pauciflora* basing it on *Gilbert* 40, a collection from Western Australia, as is stated in the description. Bentham who had not seen this collection based his description on a collection of McArthur and mistranslated “Nova Hollandia occidentalis” from Turczaninow’s description as East Australian. The species described by Turczaninow differs from the New South Wales species in having axillary not terminal inflorescences and only seven staminal filaments in each bundle. The name *M. pauciflora* does not apply therefore to the New South Wales species. Bentham described *M. leptoclada* basing it on collections from Western Australia collected separately by Brown and Drummond. These collections match the type of *M. pauciflora* Turcz. *M. leptoclada* Benth. (1867) is therefore placed in synonymy under *M. pauciflora* Turcz. (1847) here.

- 11. *Melaleuca halmaturorum*** F. Muell. ex Miq., *Nederl. Kruidk. Arch.* 4: 122 (1856); *Checi*, *Trans. Roy. Soc. S. Aust.* 43: 369 (1919); Carrick & Chorney, *J. Adelaide Bot. Gard.* 1(5): 294, f.90 (1979). **Type:** South Australia: Kangaroo Island “Ad flumen Three-Wells-river insulae Halmaturorum”, *H. Heuzenroeder* (MEL).

Shrub or small tree to 7 m high. Bark layered, papery. Branchlets glabrous or shortly woolly pubescent, glabrescent. Leaves opposite or subopposite, decussate, flat or commonly concave above, recurved, linear-ovate, acute to obtuse, narrowly attenuate at base, 3–9 mm long, 1–2 mm wide, glabrous or shortly woolly pubescent, glabrescent early, 3-veined, obscure oil glands usually visible below with lens; petiole 1–2 mm long, glabrous. Inflorescence a few-flowered terminal spike; flowers single within each bract; rachis pubescent growing out after anthesis; bracts and bracteoles similar, ovate to acuminate, to 3 mm long, woolly pubescent. Calyx tube cup-shaped to cylindrical, glabrous 2–2.5 mm long; lobes narrowly triangular, 1.5–2 mm long, glabrous outside without hyaline margins. Petals white, ovate to nearly circular,

shortly clawed, to 2 mm long. Stamens white, glabrous; claw 1.5–2.5 mm long, filaments 6–14 attached to margin to each claw near apex, free part to 4 mm long. Style 6–8 mm long, glabrous; stigma small. Ovary 1–2 mm long, pubescent above. Fruit cup-shaped, 3–4 mm long and wide, orifice 2–3 mm diam.; thickened base of calyx lobes present; borne in small open groups.

Western Victoria to Eyre Peninsula, South Australia.

**Selected specimens.** Victoria: 45 km SSW of Mildura at NW corner of the Raak, Oct 1977, *Barnsley* 127, *Crisp & Cummings* (MEL); about ¾ mile [1 km] W of Browns Lake at Cope Cope, Oct 1966, *Willis* (MEL). South Australia: 16 miles [26 km] N of Kingstone, Nov 1963, *Stauffer & Eichler* 5399 (BRI); Track to Browns Beach, Yorke Peninsula, Oct 1966, *Phillips* 31412 (BRI).

The varieties *M. halmaturorum* var. *enervis* F. Muell. ex Miq. and *M. halmaturorum* var. *tuberculifera* F. Muell. ex Miq. are not considered distinct (see Carrick & Chorney).

**12. *Melaleuca cheelii*** C. White, Proc. Roy. Soc. Qd 43: 16, t.2 (1931). **Type:** Queensland: Wide Bay District: Traverston, 6 Oct 1929, *White* 6335 (BRI, holo).

Shrub or small tree to 10 m high. Bark layered, papery. Branchlets pubescent with straight and crisped hairs. Leaves opposite, decussate, flat, broadly elliptical, acute, usually apiculate, cuneate at base, 5–10 mm long, 2–6 mm wide, pubescent with straight and crisped hairs, glabrescent, 3–(rarely 5)–veined, oil glands variable; petiole 0.5–1.5 mm long, usually pubescent. Inflorescence a few- to many-flowered, usually open terminal spike; flowers mostly single within each bract, some in triads; rachis pubescent, growing out after anthesis; bracts ovate 2–3 mm long, thinly pubescent, deciduous; bracteoles variable, pubescent to 0.5 mm long, deciduous. Calyx tube cup-shaped, 2–3 mm long, pubescent; lobes ovate to triangular, 0.5–1 mm long, puberulous, without hyaline margin. Petals white, nearly circular with a distinct narrow claw, 2–3 mm long. Stamens white, glabrous; claw 1.5–2.5 mm long; filaments 8–16 attached to margin of each claw near apex, free part to 6 mm long. Style 10–12 mm long, glabrous, stigma capitate. Ovary 1–1.5 mm long, pubescent above. Fruit cylindrical, 4–5 mm long, 5–6 mm wide, orifice ca 4 mm diam.; calyx lobes semi-persistent; in dense short spikes.

Queensland, restricted to Wide Bay District.

**Selected specimens:** Queensland. WIDE BAY DISTRICT: 27 km from Bundaberg on Childers Rd, Sep 1972, *Bates* (BRI); Coonarr Creek, SE of Bundaberg, Aug 1973, *Hockings* (BRI); Burrum Heads Road (25° 10'S, 152° 45'E), Sep 1965, *Gittins* 1127 (BRI); 1.6 km W of Woodgate, Jan 1975, *Robinson* (BRI).

**13. *Melaleuca tortifolia*** Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** New South Wales: Barren Mountain, W of Dorrigo, Dec 1967, *Williams* s.n. (NE 39994A, holo; NSW, iso).

Shrub to 4.5 m high. Bark layered, papery. Branchlets villous, glabrescent. Leaves opposite, decussate, flat, commonly twisted, ovate, acute, somewhat cuspidate, attenuated at the base, 8–15 mm long, 2–4 mm wide, villous, glabrescent, 3 (rarely 5) veins visible on both surfaces, oil glands not visible; petioles 1–2 mm long, glabrescent. Inflorescence a few- to many-flowered, dense short terminal spike; flowers usually in triads; rachis villous, growing out before or at anthesis; bracts broadly ovate, 5–6 mm long, villous 3–5–veined semipersistent; bracteoles absent. Calyx tube turbinate to campanulate, 2–3 mm long, villous; lobes ovate to triangular 1–1.5 mm long, with hyaline margin, villous. Petals white or pink, nearly circular with distinct claw, 2–3 mm long. Stamens white, glabrous; claw about 1 mm long, filaments 10–16 in two rows on margin of each claw, free part to 5 mm long. Style 6–8 mm long, absent in male flowers; stigma small. Ovary about 1 mm long, pubescent above. Fruit cup-shaped or slightly narrowed above, 4–5 mm long, 5–6 mm wide, orifice ca 4 mm diam.; calyx lobes semipersistent; in dense short spikes.

New South Wales, restricted to the Barren Mountain area, New England.

**Specimens examined.** New South Wales: Barren Mountain west of Dorrigo, Nov 1913, *Boorman* (NSW), Oct 1967, *McReaddie* (NSW), Aug 1969, *Telford* (NSW), & Jul 1972, *Williams* 72–161 (NE).

Although related to *M. cheelii* the species is distinct, differing in leaf shape and size, indumentum, spike density and the stigma. Only one flowering specimen has been seen and in this the claws and filaments are shorter than those in *M. cheelii*.

- 14. *Melaleuca gibbosa*** Labill., Nov. Holland. Pl. Spec. 2: 30, t.172 (1806); Benth., Fl. Austr. 3: 133 (1867); Carrick & Chorney, J. Adelaide Bot. Gard. 1(5): 292, f.7 (1979). **Type:** "terra van Leuwin" on specimen, but text "Habitat in capite van Diemen" is correct (MEL).

Shrub to 3 m high. Bark rough, fissured. Branchlets glabrous. Leaves opposite, decussate, concave above, keeled below, usually reflexed at tip, broadly ovate to broadly obovate, obtuse, cuneate or rounded at base, 2–6 mm long, 1–4 mm wide, glabrous, 3 veins usually visible, oil glands visible below with lens; petiole absent or very short. Inflorescence a few- or many-flowered axillary spike or cluster; flowers single within each bract, opposite; rachis glabrous, growing out before or after anthesis and thickening in perfect spikes, male inflorescences rarely growing out; bracts leaflike, caducous; bracteoles absent. Calyx tube cylindrical in perfect flowers, turbinate in male flowers, both widened longitudinally at base, 1–2 mm long, glabrous; lobes transversely ovate, about 0.5 mm long with hyaline margins, glabrous. Petals pink, ovate-truncate, clawed, 2–2.5 mm long. Stamens purple to pink, glabrous; claw nearly absent or to 1 mm long, filaments 12–20 attached to margin of each claw in two series, free part to 4 mm long. Style 3–6 mm long, glabrous (absent in male flowers); stigma small. Ovary 1–1.5 mm long, pubescent above. Fruit truncate-conical or cylindrical, partially embedded in expanded rachis, 3–4 mm diam., orifice 2–3 mm diam.; calyx lobes absent; in decussate short spikes.

Southern Australia from Gippsland, Victoria to Eyre Peninsula, South Australia and Tasmania.

**Selected specimens.** Victoria: McKenzie Creek, Grampians, Nov 1921, *Audas* (BRI); Cassidy Gap, Serra Ra., Grampians, Dec 1975, *Streimann* (BRI). Tasmania: near Simpsons Bay, South Bruny Island, Nov 1965, *Phillips* 15184 (BRI); Clyndale near Launceston, *Simon* (BRI).

- 15. *Melaleuca decussata*** R.Br. in Aiton f., Hort. Kew. ed. 2: 415 (1812); Benth., Fl. Austr. 3: 133 (1867); Carrick & Chorney, J. Adelaide Bot. Gard. 1(5): 288, f.5 (1979). **Type:** "Native of the South Coast of New Holland, Robert Brown Esq. Introduced 1803, by Mr Peter Good" (MEL).  
Synonymy: see Carrick & Chorney, J. Adelaide Bot. Gard. 1(5): 288 (1979).

Shrub to 4 m high. Bark rough, fissured. Branchlets glabrous. Leaves opposite, decussate, flat or concave above, narrowly obovate to linear, usually obtuse, cuneate at base, 4–15 mm long, to 3 mm wide, glabrous or puberulous then soon glabrescent, 3-veined, usually obscure; oil glands visible with lens on lower surface; petioles to 1 mm long, sometimes apparently absent. Inflorescence a many-flowered usually dense, axillary (rarely terminal) spike, flowers single within each bract, opposite; rachis glabrous or puberulous, growing out usually before anthesis in perfect spikes and not at all thickening in male spikes; bracts ovate-linear to ovate-acuminate, 3–5 mm long, glabrous; bracteoles absent. Calyx tube truncate-conical to cylindrical with widened and longitudinally attached base in perfect flowers, campanulate in male flowers, about 1 mm long, glabrous; lobes transversely ovate, about 0.5 mm long. Petals, purple-pink, ovate, truncated to short claw, about 2 mm long. Stamens purple, glabrous; claw 0.5–1 mm long, filaments 10–25 in two series on each claw margin, free part to 5 mm long. Style to 6 mm long only in perfect flowers, glabrous; stigma small. Ovary about 1 mm long, pubescent above. Fruit truncate-conical, partially embedded in the expanded rachis, 3–5 mm diam., orifice 1.5–2 mm diam., calyx lobes absent; descussate in short spike.

Southern Australia from Baw Baw Ranges, Victoria to Eyre Peninsula, South Australia.

**Selected specimens.** Victoria: 40 miles [64 km] N of Hamilton, Feb 1965, *Ingwerson* (BRI); Whipstick Shrub, Nov 1960, *Phillips* 2343 (BRI); Flat Rock, Grampians, Dec 1975, *Streimann* (BRI); near Roses Gap, Grampians, Nov 1921, *Audas* (BRI).

- 16. *Melaleuca densispicata*** Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** Queensland: Darling Downs District: Yelarbon, Dec 1934, *Everist* 872 (BRI, holotype).

Shrub to 4 m high. Bark layered, papery or scaly. Branchlets glabrous or thinly puberulous. Leaves opposite, decussate, flat or concave above, convex below, sessile, linear or very narrowly ovate, acute, cuneate at base, 5–12 mm long, 0.5–1.2 mm wide, glabrous, obscurely 3–5-veined; oil glands visible with lens. Inflorescence a many-flowered, dense terminal or

axillary spike; flowers in triads; rachis densely lanate, growing out before or at anthesis; bracts broadly ovate acuminate, 3–4 mm long, glabrous with ciliate margins, striate; bracteoles linear, to 1 mm long, lanate. Calyx tube hemispherical, about 1 mm long, glabrous; lobes semicircular, to 1 mm long, glabrous with 3–5 veins. Petals chaffy, semicircular without claw, to 2 mm long, caducous. Stamens white, glabrous; claw 4–6 mm long; filaments 11–17 attached to the margin of each claw, free part to 7 mm long. Style glabrous, 8–10 mm long, stigma small. Ovary about 1 mm long, pubescent above. Fruit angular, 2–3 mm long, 3–5 mm wide, orifice about 2 mm diam., calyx lobes semipersistent; in a densely packed spike.

Eastern Australia, west of Dividing Range in southern Queensland and northern New South Wales.

**Selected specimens.** Queensland: Darling Downs District: Yelarbon–Yetman road, Dec 1972, *Everist* 9852 (BRI, NSW); between Miles and Gurrulmundi, Jun 1946, *White* 1151 (BRI); Yelarbon, Sep 1919, *White* (BRI). Warrego District: Lake Numalla, 48 km NW of Hungerford, Sep 1971, *Stanton* (BRI); 6 km W of Whitewater, May 1977, *Purdie* 662D (BRI). New South Wales: Warroo via Bourke, Dec 1935, *Morris* (BRI); Lila Springs, SE Enngonia, Aug 1964, *Carolin* 3989 (NSW); about 50 miles [80 km] NW of Louth, Dec 1966, *Gray* 4571 (CANB).

This taxon was recognised by Cheel and referred to as *M. adnata* var. *aspera* in his presidential address to the Botany Section of ANZAAS Conference in 1937 but he did not give a diagnosis or nominate any type.

**17. *Melaleuca wilsonii*** F. Muell., *Fragm.* 2: 124, t.15 (1861); Benth., *Fl. Austr.* 3: 134 (1867); Carrick & Chorney, *J. Adelaide Bot. Gard.* 1(5): 313, f.21 (1979). **Type:** South Australia “in deserto plagae Tattiar country”, *J.E. Woods*; “in eremo circum lacum Hindmarsh”, *J. Dallachy* (MEL).

Shrub to 1.5 m high. Bark compact, rough, fissured. Branchlets woolly, soon glabrescent. Leaves opposite, decussate, sessile, flat or mostly concave above, linear triangular or narrowly ovate, sharply acute sometimes acuminate, truncate, 8–15 mm long, 1–2 mm wide, thinly woolly, glabrescent early, 3–veined usually obscure, oil glands barely visible below. Inflorescence usually few-flowered axillary spike or head, sometimes terminal; flowers single within each bract; rachis glabrous or thinly pilose rarely growing out after anthesis; bracts broadly ovate to 4 mm long, margins ciliate; bracteoles absent. Calyx tube campanulate to turbinate, 2–2.5 mm long and wide, tomentose; lobes narrowly triangular, 2–3 mm long with hyaline margins, tomentose. Petals pink, broadly ovate with or without short claw, about 3 mm long. Stamens pink, glabrous; claw 6–7 mm long; filaments 7–15 attached to margin of each claw near apex, free part to 6 mm long. Style 8–15 mm long, glabrous; stigma capitate. Ovary to 1.5 mm long, pubescent above. Fruit campanulate 4–5 mm diam., to 5 mm long including the persistent woody calyx lobes, orifice about 3 mm diam., borne in small clusters.

Southern Australia from western Victoria to south-eastern South Australia.

**Selected specimens.** Victoria: Whipstick scrub, Nov 1960, *Phillips* 2348 (BRI); near Tarnagulla, Nov 1971, *Phillips* 41239 (BRI); Wimmera R., Nov 1890, *C.W. (alter)* (BRI); Bills Hill, Yanac to Maryville Rd, Nov 1976, *Ogden* 18009 (CANB); few miles W of Nhill, Hwy 8, Nov 1972, *Beamish* 1650 (CANB).

**18. *Melaleuca acuminata*** F. Muell., *Fragm.* 1: 15 (1858); Benth., *Fl. Austr.* 3: 132 (1867); Carrick & Chorney, *J. Adelaide Bot. Gard.* 1(5): 284, f.1 (1979). **Type:** South Australia “In montibus lapidosis ad rivum Mount Barker Creek, *L. Fischer*” (MEL).

Shrub to 4 m high. Bark layered, scaly, rough. Branchlets glabrous. Leaves opposite, decussate, flat or concave above, ovate acute, cuspidate, attenuate at base, often recurved or twisted, 5–10 mm long, 2–4 mm wide, glabrous or woolly then glabrescent early, 3–veined usually at least midvein visible, oil glands usually visible; petiole to 1 mm long, glabrous. Inflorescence one- or few-flowered axillary clusters on previous years' wood; flowers single within each bract; rachis absent or very short, glabrous, not growing out; bracts circular, strongly concave, about 2 mm long, glabrous or with ciliate margins, deciduous; bracteoles absent. Calyx tube turbinate, about 2 mm long and wide, glabrous; lobes broadly triangular, to 1 mm long with hyaline margins, glabrous. Petals white often tinged pink, nearly circular, shortly clawed, about 2 mm long. Stamens white, glabrous; claw 3–5 mm long; filaments 9–17 attached to margin of upper third of each claw, free part to 3 mm long. Style glabrous, 3–5 mm long; stigma small. Ovary about 1 mm long, pubescent above. Fruit cup-shaped, 3–4 mm long, 4–5 mm wide, orifice 1–2 mm diam., calyx lobes persistent, thickened; borne singly or in small clusters.

Southern Australia from south-western New South Wales and western Victoria to south-western Western Australia.

**Selected specimens.** Victoria: Far north-west, Rock Holes Bore, Sunset Country, Sep 1963, *Wettenhall* 18 (MEL); North-west grid C29 Little Desert, 36°30'S, 141°10'E, Nov 1974, *Corrick* 4845 (MEL). South Australia: Hincks National Park, Oct 1968, *Symon* 6505 (CANB); near Roseworthy, N of Gawler, Aug 1958, *Blake* 20445 (BRI).

**19. *Melaleuca thymifolia*** Smith, Trans. Linn. Soc. Lond. 3: 278 (1797); Benth., Fl. Austr. 3: 134 (May, 1867). **Type:** Cult. by Fairbairn (in England), seeds from N.S.W. (LINN).

*M. coronata* Andr., Repos. 4, t. 278 (1803).

*M. discolor* Reichb. ex Sprengel, Syst. Veget. 3: 337 (1876). **Type:** New Holland, *Sieber* 323 (not seen).

*M. gnidiaefolia* Vent., Jard. Malm. 1: 4, t. 4 (1803).

*Metrosideros calycina* Cav., Ic. 4: 20, t. 336 (Sep-Dec 1797).

Shrub usually to 1 m high, rarely to 6 m, commonly multibranched from lignotuber. Bark corky, flaking. Branchlets puberulous, glabrescent. Leaves opposite or subopposite, flat or concave above, narrowly elliptical, acute, cuneate at base, 5–15 mm long, 1–3 mm wide, glabrous or thinly pubescent, glabrescent early, 3-veined, sometimes obscure, oil glands usually visible with lens on lower surface; petioles to 1 mm long, glabrous. Inflorescence usually a few-flowered, dense axillary spike usually on older wood, sometimes isolated or opposite axillary pairs of flowers; flowers single within each bract; rachis glabrous, growing out before anthesis or often not at all; bracts ovate-acuminate, about 2 mm long, caducous; bracteoles circular, about 1 mm long, caducous. Calyx tube campanulate, longitudinally elongated at base, 2–3 mm long, glabrous; lobes semi-elliptical, about 2 mm long, glabrous with narrow hyaline margin. Petals pink to purple, ovate with a distinct claw, 4–5 mm long. Stamens pink to purple, glabrous; claw 4–6 mm long; filaments 40–60 attached to margin and inner surface of upper two-thirds of each claw, free part to 4 mm long. Style 8–10 mm long, glabrous; stigma small. Ovary about 2 mm long, pubescent above. Fruit cup- or barrel-shaped, 4–5 mm long and wide including the persistent, thickened calyx lobes, orifice about 2 mm diam.; either single, in clusters or in short spikes.

Eastern Australia from central coastal Queensland extending into Carnarvon Ranges and south to south coast of New South Wales.

**Selected specimens.** Queensland: Leichhardt District: Carnarvon Range, Apr 1962, *Gittins* 451 (BRI). Moreton District: Coolool Beach, Apr 1945, *Clemens* (BRI). New South Wales: Pilliga State Forest, Nov 1963, *Pedley* 1622 (BRI); Chullora, Sep 1952, *King* (BRI).

**20. *Melaleuca neglecta*** Ewart & Wood, Proc. Roy. Soc. Vic. 23: 60, t.13, f.1, 2, 3 (1910); Carrick & Chorney, J. Adelaide Bot. Gard. 1, 5: 303, f.14 (1979). **Type:** Victoria, near Bimboola, *St. Eloy D'Alton*.

*M. oraria* J. Black, Trans. R. Soc. S. Aust. 69: 309 (1945). **Type:** South Australia: Beachport, *Black* (AD).

Shrub to 3 m high. Bark rough, fissured. Branchlets glabrous. Leaves variously arranged, often scattered, opposite and whorled on a single branchlet, flat or concave above, linear-ovate to linear-elliptical, obtuse, incurved at apex, attenuated at base, 3–8 mm long, about 1 mm wide, glabrous or woolly pubescent, soon glabrescent, 3-veined obscure, oil glands usually visible below with lens as two rows of tubercles; petioles to 1 mm long. Inflorescences few-flowered clusters in axils of leaves on previous years' wood or nodes of older wood; flowers single within each bract; rachis very short, glabrous, not growing out; bracts broadly ovate to nearly circular, strongly concave, about 1 mm long, glabrous, semipersistent; bracteoles ovate, to 1 mm long with ciliate margins. Calyx tube turbinate to campanulate, 2–2.5 mm long, glabrous; lobes triangular, about 1 mm long, glabrous, without hyaline margins. Petals white, broadly ovate to nearly circular, shortly clawed, 1.5–2 mm long. Stamens white to cream, glabrous; claw 1–2 mm long; filaments 8–16 attached at apex of each claw in two rows; free part to 6 mm long. Style 6–7 mm long, glabrous; stigma capitate. Ovary 1–2 mm long, pubescent above. Fruit cylindrical, 4–5 mm long and wide, orifice about 3 mm diam., bases of calyx lobes thickened, persistent; single or in small clusters.

Southern Australia from western Victoria to Eyre Peninsula, South Australia.

**Selected specimens.** **Victoria:** Big Desert, 18.5 miles [30 km] N of Kaniva, Oct 1966, *Phillips 570* (BRI); Upper Glenelg, Dec 1903, *Williamson* (BRI); Wimmera R., Nov 1890, *Walton* (BRI); Grampians, Black Range, Dec 1968, *Beauglehole 30057* (MEL).

Sometimes the flowering clusters are so dense along the stem that it appears to be a single inflorescence.

- 21. *Melaleuca angustifolia*** Gaertner, *Fruct. et Semin.* 1: 172, t. 35 (1788); Benth., *Fl. Austr.* 3: 139 (1867). **Type:** Endeavour River, *Banks & Solander* (NSW).  
*Austromyrtus gaertneri* Schauer, *Linnaea* 17: 234 (1843). Based on *M. angustifolia* Gaertner.

Shrub or small tree to 9 m high. Bark flaky, tight, fibrous. Branchlets glabrous. Leaves scattered, flat, very narrowly elliptical or obovate, obtuse, cuneate at base, 20–60 mm long, 2–7 mm wide, usually glabrous, 3–7-veined usually visible, oil glands numerous visible with lens; petiole about 1 mm long, continuous with lamina. Inflorescence 3–8-flowered, terminal or sometimes on short axillary branchlets, flowers single within each bract; rachis pubescent, not growing out; bracts broadly ovate, to 7 mm long, pubescent outside, persistent; bracteoles oblong, strongly keeled, to 7 mm long, sericeous along keel, persistent. Calyx tube cylindrical to campanulate, to 12 mm long, appressed pubescent at base, tardily circumsciss at top of ovary; lobes circular to spatulate, ca 4 mm long, pubescent, margin hyaline. Petals white to yellow, obovate without claw, to 7 mm long. Stamens white to yellow, glabrous; claw 10–12 mm long, almost terete; filaments very numerous, radiating from apex of each claw; free part to 6 mm long. Style about 24 mm long, glabrous; stigma capitate to peltate. Ovary about 2 mm long, glabrous above. Fruit turbinate, about 7 mm long and wide, calyx tube thin; upper tube, lobes and stamens semipersistent; about 4 capsules per head with persistent bracts and bracteoles.

North-eastern Australia on the east coast of Cape York Peninsula north of the Endeavour River.

**Selected specimens.** **Queensland:** Cook District: Newcastle Bay, 2½ miles [4 km] S of Somerset, May 1948, *Brass 18664* (BRI); Cape York, Jun 1961, *Volck 1949* (BRI); ca 10 km north of upper crossing of Massey Creek, Aug 1978, *Clarkson 2452* (BRI); Cape Flattery, Apr 1975, *McDonald & Batianoff 1617B* (BRI).

- 22. *Melaleuca magnifica*** Specht, *Am.-Aust. Sc. Exp. to Arnhem Land* 3: 270, f. 11 (1958).  
**Type:** South Bay, Bickerton Is., 21 Jun 1948, *Specht 642* (BRI).

Shrub to 3 m high. Bark flaky. Branchlets pubescent, glabrescent. Leaves scattered, flat, narrowly elliptical or narrowly ovate, acute, attenuate at base, 20–90 mm long, 5–10 mm wide, appressed pubescent, glabrescent, 3–5-veined, oil glands numerous visible with lens; petioles to 4 mm long, pubescent, glabrescent. Inflorescence a many-flowered dense terminal head to 60 mm diam.; flowers single within each bract; rachis glabrous, not growing out; bracts pentagonal, about 10 mm long, pubescent, persistent; bracteoles obtriangular, 7–8 mm long, strongly keeled towards apex, pubescent, often splitting, persistent. Calyx tube campanulate, sometimes narrowing below lobes, about 10 mm long, sericeous, tardily circumsciss below lobes; lobes orbicular, pubescent with thin glabrous margins, to 5 mm long. Petals cream, circular without distinct claws, 7–9 mm long. Stamens cream to yellow, glabrous; claw 8–12 mm long; filaments very numerous, attached to margin and inner surface of upper half of each claw, free part to 5 mm long. Style to 20 mm long, glabrous, pustulate; stigma capitate. Ovary about 7 mm long, pubescent above. Fruit angular, about 7 mm long and 9 mm wide, orifice about 7 mm diam., retaining upper calyx tube, lobes and stamens at first, at length circumsciss; 16–40 in dense head, bracts retained.

Northern Australia, restricted to Arnhem Land Aboriginal Reserve and Groote Eylandt in the Northern Territory.

**Selected specimens.** **Northern Territory:** 12° 19'S, 133° 14'E, Jul 1972, *Lazarides 7549* (DNA, BRI, CANB); ESE of Mudginberry, Feb 1973, *Dunlop 3312* (DNA, BRI); 8 km W of Rum Bottle Creek, Jun 1972, *Symon 7957* (BRI), Oenpelli, Oct 1948, *Specht 1135* (BRI).

- 23. *Melaleuca arnhemica*** Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** Northern Territory: Kakadu National Park, 13° 24'S, 132° 42½'E, May 1980, *Craven 5926* (BRI, holo; CANB, iso).



Shrub to 5 m high. Bark fissured, hard, fibrous. Branchlets thinly pilose, glabrescent. Leaves narrowly elliptical to narrowly obovate, obtuse, narrowly cuneate at the base, 30–60 mm long, 5–12 mm wide, glabrous or thinly pilose, glabrescent, 5–7-veined, oil glands numerous visible with lens; petiole about 2 mm long. Inflorescence a dense terminal head (10–25 flowers); flowers single within each bract; rachis pubescent but obscured, not growing out; bracts pentagonal to semicircular, to 4 mm long, appressed pubescent, persistent; bracteoles obovate, about 3 mm long, keeled, appressed pubescent, persistent. Calyx tube turbinate below top of ovary, constricted above, about 4 mm long and 3 mm wide, circumsciss at length at top of ovary; lobes broadly ovate, about 1 mm long, pubescent with hyaline margin. Petals white to yellow, markedly obovate to spatulate, to 3 mm long. Stamens white to yellow, glabrous; claw 2–3 mm long; filaments 12–24 attached to margin and inner surface of upper half of each claw, free part to 4 mm long. Style about 6 mm long, glabrous; stigma capitate. Ovary about 2 mm long, pubescent above. Fruit turbinate, angular, to 5 mm long and wide, orifice to 4 mm diam., upper calyx tube and lobes deciduous; in dense head with persistent bracts.

Northern Australia, restricted to a small area within the Alligator Rivers systems, Northern Territory.

Specimens examined. Northern Territory: 13° 08'S, 132° 56'E, May 1980, *Craven* 6095 (BRI), *Craven* 6100 (CANB) & *Lazarides* 9069 (BRI); 13° 18'S, 132° 31'E, Jun 1980, *Craven* 6238 (CANB).

**24. *Melaleuca acacioides*** F. Muell., *Fragm.* 3: 116 (1862); Benth., *Fl. Austr.* 3: 138 (1867).

**Type:** Roper River, Carpentaria, *F. Mueller* (MEL).

*M. alsophila* Cunn. ex Benth., *Fl. Austr.* 3: 137 (1867). **Type:** Usborne Harbour, Cambridge Gulf, *A. Cunningham* (K).

*M. acacioides* var. *angustifolia* Domin, *Bibl. Bot.* 89: 455 (1928). **Type:** Walsh R., Nov 1910, *Domin* (PR).

*M. graminea* S. Moore, *J. Linn. Soc. Bot.* 45: 204 (1920). **Type:** NW Australia, *DeBouley* (BM).

Shrub to 6 m high. Bark layered, fibrous sometimes papery. Branchlets pubescent, glabrescent. Leaves scattered, flat, linear ovate to broadly obovate, acute to obtuse, apiculate, narrowly cuneate at base, 15–95 mm long, 2–15 mm wide, puberulous, glabrescent, 3–5-veined usually visible, oil glands usually obscure; petioles 2–5 mm long, pubescent, glabrescent. Inflorescence a few- to many-flowered, dense, axillary or terminal head, flowers in triads, sometimes single within each bract; rachis sericeous, terminating in a head of scales, seldom growing out but sometimes after anthesis producing either a further inflorescence or vegetative shoot; bracts broadly ovate, about 1 mm long, persistent; bracteoles strongly keeled and very small. Calyx tube turbinate, to 2 mm long and 1 mm wide, glabrous or pubescent; lobes broadly ovate to semicircular, about 0.5 mm long, glabrous or pubescent, with hyaline margins. Petals white, nearly circular without claw, 1–1.5 mm diam. Stamens white, glabrous; claw 2–3 mm long; filaments 8–10 attached to margin of each claw near apex, free part to 4 mm long. Style 6–7 mm long, glabrous; stigma small. Ovary about 1 mm long, pubescent above. Fruit barrel-shaped, about 2 mm long and wide, orifice about 1 mm diam.; calyx lobes semi-persistent; in small dense globular heads.

Northern Australia, from Kimberley area of Western Australia to Cape York Peninsula, Queensland.

Selected specimens. Western Australia: near Wyndham Township, Jul 1949, *Perry* 2556 (BRI). Northern Territory: Melville Bay, Aug 1948, *Specht* 920 (BRI). Queensland: Burke District: Lower Settlement Creek, in 1922, *Brass* (BRI). Cook District: 2 miles [3 km] S of Bathurst Bay, Sep 1970, *Hyland* 4621 (BRI).

*Melaleuca acacioides* exhibits a great range of variation in leaf size and shape even on the one plant and there is also variation in indumentum.

Bentham distinguished *M. alsophila* from *M. acacioides* on leaf shape and calyx indumentum but many intermediate forms exist giving a continuum between the extremes. Likewise Domin recognised *M. acacioides* var. *angustifolia* based on leaf shape. Because of the lack of any discontinuity in the range of leaf size or shape and indumentum characteristics, *M. alsophila* and *M. acacioides* var. *angustifolia* cannot be maintained.

Although the type of *M. graminea* S. Moore has not been seen, from the protologue description the taxon comes within the range of variation of *M. acacioides*.

- 25. *Melaleuca symphyocarpa*** F. Muell., Trans. Phil. Inst. Vic. 3: 44 (1859); Benth., Fl. Austr. 3: 138 (1867). **Type:** Roper (R.), Limmen Bight and McArthur R., *F. Mueller* (MEL). *M. symphyocarpa* f. *aurantiaca* C. White, J. Arnold. Arb. 23: 89 (1942). **Types:** Tarara, Wassi Kussa River, Dec 1936, *Brass* 8532 & 8381 (BRI).

Shrub or small tree to 10 m high. Bark hard, fluted and finely fissured. Branchlets tomentose or glabrous. Leaves scattered, flat, narrowly obovate to elliptical, obtuse, cuneate at base, 25–90 mm long, 5–20 mm wide, glabrous except near base, 5–9-veined, oil glands numerous visible with lens; petioles poorly defined, about 1 mm long, tomentose. Inflorescence a dense head of 5–15 flowers, axillary, sessile or terminating short branchlets on old wood; flowers single within each bract; rachis obscured, not growing out; bracts angular, obovate to oblong, to 4 mm long, pubescent outside; bracteoles narrow oblong, to 4 mm long, keeled, pubescent outside. Calyx tube cylindrical and glabrous above ovary, turbinate and pubescent below, about 5 mm long, at length circumscess at top of ovary; lobes semicircular, about 1 mm long, pubescent with narrow hyaline margins. Petals yellow-orange, broadly elliptical, sometimes shortly clawed, to 3 mm long. Stamens orange to yellow, rarely reddish, glabrous; claw to 8 mm long, terete; filaments 12–16 radiating from apex of each claw, free part to 6 mm long. Style to 15 mm long, glabrous; stigma peltate. Ovary to 3 mm long, glabrous above (? covered by nectary). Fruit turbinate, 2–3 mm long, 5–6 mm diam., orifice to 5 mm diam., calyx lobes and part of tube circumscess, deciduous; in dense spherical heads.

Northern Australia from Daly River, Northern Territory, to Cape York Peninsula, Queensland and also in Papua New Guinea.

**Selected specimens. Northern Territory:** near Koolpinyah, Sep 1946, *Blake* 16950 (BRI); 14 km SW Bing Bong H/s, Jun 1971, *Dunlop* 2265 (BRI, DNA). **Queensland:** Burke District: Nicholson River, Jun 1963, *Gittins* 815 (BRI). Cook District: Lockerbie, Apr 1948, *Brass* 18351 (BRI).

White recognised the existence of two taxa in New Guinea but considered that *M. brassii*, a red flowering species, was *M. symphyocarpa* and so described the orange-flowered taxon as “forma *aurantiaca*”. Mueller’s original description was based on the orange-flowered taxon so White’s forma cannot be maintained.

- 26. *Melaleuca brassii*** Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** Papua New Guinea: Western Division: Wuoroi, Oriomo River, Jan-Mar 1934, *Brass* 5690 (BRI, holo).

Shrub or tree to 25 m high. Bark layered, fibrous and deeply furrowed. Branchlets pubescent. Leaves scattered, flat, narrowly elliptical to obovate, obtuse, cuneate at base, 40–100 mm long, 7–15 mm wide, glabrous with some crispid hairs near base, usually 7–9-veined, oil glands visible with lens; petioles 1–1.5 mm long, poorly defined, pubescent. Inflorescence a dense head of 6–10 flowers, axillary, sessile or terminating short branchlets on old wood; flowers single within each bract; rachis obscured, not growing out; bracts broadly ovate, to 8 mm long, sericeous, persistent, upper margin commonly splitting; bracteoles bilobed, keeled, to 8 mm long, sericeous, persistent. Calyx tube cylindrical, fleshy, to 10 mm long and 5 mm wide, appressed pubescent, at length circumscess at top of ovary; lobes red, semicircular to oblong, to 3 mm long, pubescent, with lateral thin margins. Petals red, broadly ovate, 5–6 mm long. Stamens red, glabrous; claw to 12 mm long, terete; filaments 40–50 radiating from apex of claw, free part to 5 mm long. Style 13–20 mm long, glabrous; stigma capitate. Ovary to 3 mm long, glabrous above (? covered by nectary). Fruit turbinate, to 6 mm long, 6–10 mm wide, calyx tube thin, circumscess; 3–10 in head with persistent bracts.

Papua New Guinea and northern Australia in Cape York Peninsula, Queensland.

**Specimens examined. Papua New Guinea:** Western Division: Gamia, Lower Fly River, Nov 1936, *Brass* 8257 (BRI); Tarara, Wassi Kussa River, Dec 1936, *Brass* 8533 (BRI); Oriomo R., Jan 1959, *White & Gray* NFG 10364 (BRI) & Feb 1953, *Hart* 5016 (BRI); Wean, Jul 1967, *Ridsdale* NFG 33528 (BRI). **Queensland:** Cook District: Mt Tozer, Sep 1962, *Volck* 2443 (BRI), Oct 1968, *Webb & Tracey* 8618 (BRI), Nov 1968, *Bredden* 1968 (BRI); Badu Is., Torres Strait, Jun 1979, *Garnett* (BRI); Bamaga, May 1962, *Webb & Tracey* 6041 (BRI) & Oct 1965, *Smith* 12357 (BRI); Lockerbie, Nov 1962, *Hyland* 2484 (BRI); 12 miles [19 km] S of Portland Road, June 1972, *Stocker* 871 (BRI); between Laura and Musgrave, Sep 1976, *Wrigley* 197 (BRI).

The species is named in honour of L.J. Brass who first collected it in Western Papua. It differs from *M. symphyocarpa*, which is found in the same area, in having bilobed bracteoles,

a longer, thicker fleshy red calyx tube, more numerous stamens and larger fruiting capsules enclosed in papery thin remains of the calyx tube.

- 27. *Melaleuca cornucopiae*** Byrnes, *Austrobaileya* 2: 74 (1984). **Type:** Northern Territory: Koongarra, 12° 52'S, 132° 52'E, 16 Nov 1975, *Dunlop* 4030 (BRI, holotype; DNA, iso).

Shrub to 3 m high. Bark layered, papery. Branchlets thinly pilose, glabrescent. Leaves scattered, flat, narrowly obovate, obtuse or rounded, narrowly attenuate at base, 30–95 mm long, 4–12 mm wide, pilose, glabrescent, 5–7-veined, oil glands obscure; petioles 4–12 mm long, glabrescent. Inflorescence a many-flowered, dense terminal or upper-axillary spike; flowers in triads (obscure), opening markedly centripedally; rachis lanate, growing out after anthesis; bracts semicircular-acuminate, to 5 mm long, multi-veined, semi-persistent; bracteoles absent. Calyx tube broadly turbinate, 1–1.5 mm long, densely pubescent; lobes absent. Petals white, nearly circular, shortly clawed, 1–1.5 mm long, ciliate. Stamens pale yellow, glabrous; claw 1–1.5 mm long; filaments 4–5 attached to margin of each claw, free part to 4 mm long, shorter in female flowers with aborted anthers. Style to 5 mm long in female flowers, absent in males, glabrous; stigma capitate. Ovary 0.7–1 mm long, pubescent above. Fruit compressed-angular, 3–4 mm long and wide, orifice about 2 mm diam.; in a dense spike.

Northern Australia, restricted to the Arnhem Land area of Northern Territory.

**Specimens examined.** Northern Territory: 1.5 km NE of Koongarra, Sep 1978, *Rankin* 1404 (DNA, BRI); Little Nourlangie Rock, Feb 1977, *Fox* 2570 (DNA, BRI) & Mar 1978, *Dunlop* 4742 (DNA); Mt Brockman, Koongarra Jump-up, Dec 1978, *Dunlop* 3299 (DNA, BRI); 4 km NW of El Sharana on Pine Creek Rd, Jan 1973, *Mason* AE 522 (DNA, BRI); Nabarlek, 12° 20'S, 133° 20'E, Apr 1979, *Rice* 3081 (DNA); Cooper Creek area, Apr 1979, *Rankin* 2214 (DNA).

The semi-persistent bracts enclosing the buds gives the young inflorescences a horn-like appearance. The marked centripetal anthesis produces a mass of stamens from the tightly packed flowers at the base of the horn hence the specific epithet. The absence of calyx lobes and female flowers with aborted anthers are characters that do not occur in other species treated in this paper.

- 28. *Melaleuca glomerata*** F. Muell., Rep. Babbage Exp. 10 (1859); Benth., Fl. Austr. 3: 151 (1867); Carrick & Chorney, J. Adelaide Bot. Gard. 1(5): 293 (1979). **Types:** "Lake Gregory, Arcoona, Lake Campbell. Occurs also on Sturt's Creek in the interior of N.W. Australia" (not seen).

*M. hakeoides* F. Muell. ex Benth., Fl. Austr. 3: 151 (1867). **Type:** "New South Wales, Mount Goningberi, near Coopers Creek, Victoria Expedition" (MEL).

Shrub to 8 m high. Bark layered, papery. Branchlets pubescent at length glabrescent. Leaves scattered, flat, linear obovate, rarely narrowly obovate, acute, cuspidate, cuneate at base, 10–50 mm long, 1–4 mm wide, densely pubescent, sometimes glabrescent, usually 3-veined obscure, oil glands usually visible with lens; petioles very short or absent. Inflorescence a few- to many-flowered dense, pseudo-pedunculate axillary or terminal head; flowers single within each bract; rachis pubescent, growing out after anthesis; bracts rarely present, broadly elliptical, acuminate, about 1 mm long, caducous; bracteoles absent. Calyx tube turbinate or cup-shaped, 1.5–2 mm long and wide, pubescent, lobes semicircular to 0.5 mm long, pubescent, with or without narrow margins. Petals white, nearly circular; shortly clawed, 1.5–2 mm long. Stamens white to yellow, glabrous; claw 0.5–1.5 mm long; filaments 4–9 attached to the margin of each claw, free part to 5 mm long. Style 4–7 mm long, glabrous; stigma small. Ovary about 1 mm long, pubescent above. Fruit ovoid truncate, angular at base, 1.5–2.5 mm long and wide, orifice about 1 mm diam., calyx lobes absent; in globular clusters.

Arid areas of Western Australia, western and southern Northern Territory, northern South Australia and north-western New South Wales.

**Selected specimens.** Western Australia: about 150 miles [240 km] S of Broome, Aug 1962, *Johnston* (BRI). Northern Territory: 24 miles [38 km] S of Barrow Creek, Sep 1955, *Perry* 5359 (BRI); 18 miles [29 km] E of Mt Wedge Station, Sep 1956, *Lazarides* 6049 (BRI); Churnside Creek, Petermann Ranges, Sep 1969, *Maconochie* 750 (BRI).

- 29. *Melaleuca uncinata*** R.Br. in Aiton f., Hort. Kew. ed. 2, 4: 414 (1812); Benth., Fl., Austr. 3: 150 (1867); Carrick & Chorney, J. Adelaide Bot. Gard. 1(5): 311 (1979). **Type:** South Coast, New Holland, R. Brown, cultivated at Kew England, by Peter Good (K).
- M. drummondii* Schauer in Lehm., P1. Preiss. 1: 138 (1844). **Type:** "Nova-Hollandia austro-occidentali", J. Drummond (K).
- M. semiteres* Schauer in Lehm., P1. Preiss. 1: 143 (1844). **Type:** "Nova-Hollandia austro-occidentali", J. Drummond (not seen).
- M. hamata* Field & Gardner, Sert. P1. t.74 (1844). **Type:** Swan River Colony, J. Drummond 116 (MEL).
- M. nodosa* (Gaertner) Smith var. *stenostoma* Domin, Bibl. Bot. 89: 485 (1928). **Type:** Dividing Range, Jericho, Domin 1910 (PR).

Shrub to 3 m high, usually virgate. Bark layered, papery and fibrous. Branchlets thinly to densely sericeous. Leaves scattered, terete, often compressed, rarely linear, acute, cuspidate, mostly with a strongly recurved tip, cuneate at base, 15–60 mm long, about 1 mm wide, sericeous, soon glabrescent, 1–3-veined obscure, oil glands numerous visible with lens; petiole very short or absent. Inflorescences few- to many-flowered, dense, axillary and terminal pseudo-pedunculate male or perfect heads; flowers usually single within each bract; rachis pubescent, growing out usually about anthesis in perfect-flowered heads; bracts broadly ovate, often absent, 2–3 mm long, caducous; bracteoles absent. Calyx tube turbinate, 1–2 mm long, about 1 mm wide, pubescent; lobes very short, about 0.2 mm long, hyaline, usually glabrous. Petals white to yellow, nearly circular without claw, about 1 mm diam. Stamens white to yellow, glabrous; claw about 2 mm long; filaments 4–8 attached to upper margin of each claw; free part to 4 mm long. Style 4–6 mm long, glabrous (absent in male flowers); stigma small. Ovary about 1 mm long, pubescent above. Fruit compressed angular turbinate about 3 mm long and wide, orifice about 1 mm diam., calyx lobes absent; in dense globular heads.

Widespread species in drier areas of Australia including southern Northern Territory, south and central Queensland, western New South Wales, northern Victoria, South Australia and southern Western Australia.

**Selected specimens.** Queensland: Mitchell District: Joycedale, SW from Jericho, Jul 1934, Blake 6805 (BRI). Darling Downs District: Gurulmundi-Woleebee Road, Oct 1975, Williams 75130 (BRI). New South Wales: Mt Meongel, N of Griffith, Nov 1950, Gauba 2332 (BRI). Victoria: Whipstick Scrub, N of Bendigo, Feb 1965, Ingwerson 11814 (BRI).

The three species *M. glomerata*, *M. uncinata* and *M. nodosa* are similar in appearance. *M. glomerata* has longer pubescent calyx lobes and dense pubescence on the leaves and branchlets which is persistent or semi-persistent. The leaves are always linear and the peduncles on flowering heads are commonly more than 4 mm long. *M. uncinata* and *M. nodosa* have very short glabrous calyx lobes, sericeous, early glabrescent leaves and branchlets, terete or linear leaves and the flowering-head peduncles are usually less than 5 mm long. *M. uncinata* and *M. nodosa* are closely related but can be distinguished by the cuspidate leaf-tip being recurved in *M. uncinata*. This species also tends to be more virgate in habit and develops a lignotuber. *M. nodosa* and *M. glomerata* are separated geographically but their ranges overlap that of the very widely distributed *M. uncinata*.

- 30. *Melaleuca nodosa*** (Gaertner) Smith, Trans. Linn. Soc. Lond. 3: 276 (1797); Benth., Fl. Austr. 3: 158 (1867). Based on *Metrosideros nodosa* Gaertner, Fruct. et Semin. 1: 172, t.34, f.6 (1788). **Type:** Banks & Solander (NSW).
- M. juniperina* Sieber ex Reichb., Ic. Exot. Bot. 2: 5, t.112 (1828). Based on *Metrosideros juniperoides* Reichb. **Type:** New Holland, Sieber 317 (MO), (Frag. in BRI).
- M. juniperoides* Reichb. ex DC., Prod. 3: 213 (1828). **Type:** as for *Metrosideros juniperoides* Reichb.
- Metrosideros juniperina* Reichb. ex A. Sprengel, Syst. Veg. 4(2): 194 (1827). **Type:** New Holland, Sieber (not seen).
- Metrosideros pungens* Reichb., loc. cit. **Type:** New Holland, Sieber (not seen).
- Melaleuca tenuifolia* DC., Prod. 3: 213 (1828), non Wendl. (1798). **Type:** Eastern Australia (G-DC).
- M. nodosa* (Gaertner) Smith var. *tenuifolia* (DC.) Penfold, J. Roy. Soc. N.S.W. 63: 107 (1930). Based on *M. tenuifolia* DC.

Shrub to 7 m high. Bark layered, papery. Branchlets thinly pilose, glabrescent. Leaves terete or linear ovate, acute, cuspidate with straight tips, cuneate at base, 15–40 mm long, 1–3 mm wide, sericeous, glabrescent early, 1–3-veined usually obscure in terete leaves, oil glands barely visible with lens; petioles to 1 mm long, glabrous. Inflorescence dense with few to many male or perfect flowers, axillary and terminal shortly pseudo-pedunculate heads; flowers single, pairs or triads within each bract; rachis sericeous, growing out after anthesis at least in perfect-flowered heads; bracts broadly elliptical to 2 mm long, glabrous, deciduous; bracteoles absent. Calyx tube turbinate, 1–1.5 mm long, pubescent towards base; lobes obtuse, very short to 0.5 mm long, hyaline, glabrous, sometimes reduced to undulate ring. Petals yellow-white, circular with or without claw, 1–1.5 mm long. Stamens yellow, glabrous; claw 1–2 mm long; filaments 3–5 attached to upper margin of each claw, free part to 5 mm long. Style 6–8 mm long, absent in male flowers, glabrous; stigma small. Ovary to 1 mm long, pubescent above. Fruit compressed angular turbinate, about 3 mm long and wide, orifice 1–1.5 mm diam., calyx lobes absent; in dense globular heads.

Eastern Australia in coastal areas and adjacent ranges from Queensland to New South Wales near Sydney.

**Selected specimens.** Queensland: Cook District: Kennedy Highway, 9.2 km NE of Mt Surprise turnoff, Nov 1975, *Staples* IBS2227 (BRI). Wide Bay District: Tin Can Bay, Sep 1946, *Clemens* (BRI). Darling Downs District: near Warwick, Sep 1973, *Pedley* 4174 (BRI). New South Wales: Port Jackson, Oct 1900, *Helms* (BRI).

**31. *Melaleuca lasiandra*** F. Muell., *Fragm.* 3: 115 (1862); Benth., *Fl. Austr.* 3: 143 (1867); S.T. Blake, *Cont. Qd Herb.* 1: 68 (1968). **Type:** Fitzmaurice R., Oct 1855, *F. Mueller* (MEL).

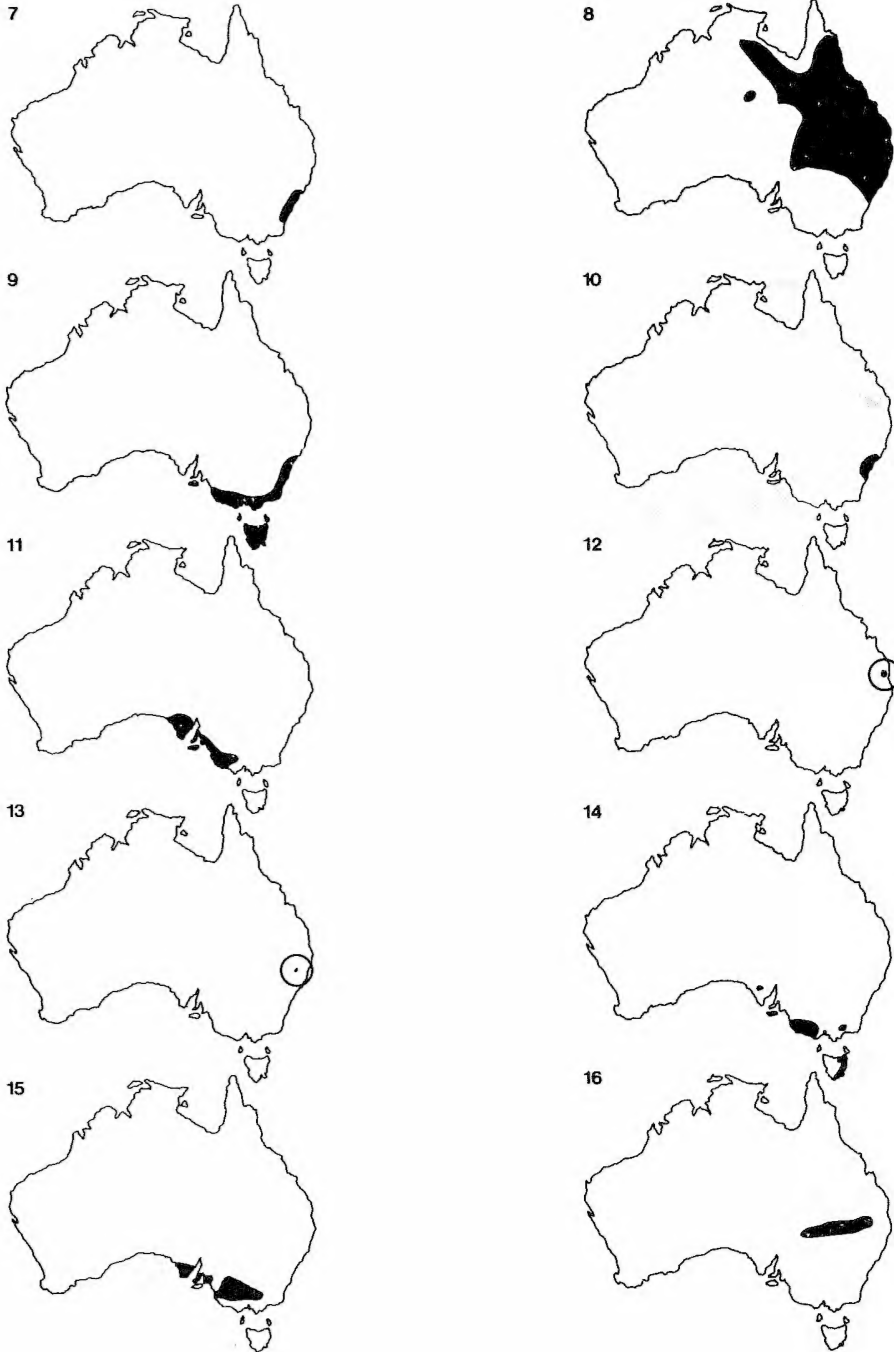
*M. loguei* W. Fitzg., *J. Roy. Soc. W. Aust.* 3: 188 (1918). **Type:** Western Australia: S of Fitzroy R., Sep 1906, *W. V. Fitzgerald* (NSW).

Shrub or rarely small tree to 8 m high. Bark layered, papery. Branchlets pubescent. Leaves scattered, flat, narrowly elliptical to obovate, acute to acuminate, cuneate at base 12–50 mm long, 2–7 mm wide, sericeous, rarely glabrescent, 1–3(–5)-veined, oil glands obscure; petiole 1–2.5 mm long, poorly defined. Inflorescence a many-flowered usually open terminal spike; flowers in triads; rachis villous growing out after anthesis; bracts ovate to saggitate, to 2 mm long, pubescent, caducous; bracteoles absent. Calyx tube turbinate to campanulate, 1.5–2.2 mm long and wide, villous; lobes triangular to ovate, 1–1.2 mm long, pubescent without hyaline margins. Petals white, nearly circular without claw 2–2.2 mm diam., deciduous early. Stamens white, thinly villous; claw 1–3 mm long; filaments 6–20 attached to margin of each claw sometimes in small groups or stamens free; free part to 8 mm long. Style 6–9 mm long, thinly pilose; stigma small. Ovary 1–1.5 mm long, pubescent above. Fruit cup-shaped to 2.5 mm long, 3 mm wide, orifice 2.5 mm diam., calyx lobes deciduous; in dense or open spikes.

Northern Australia, from the Kimberley area, Western Australia, through the Northern Territory to central western areas of Queensland.

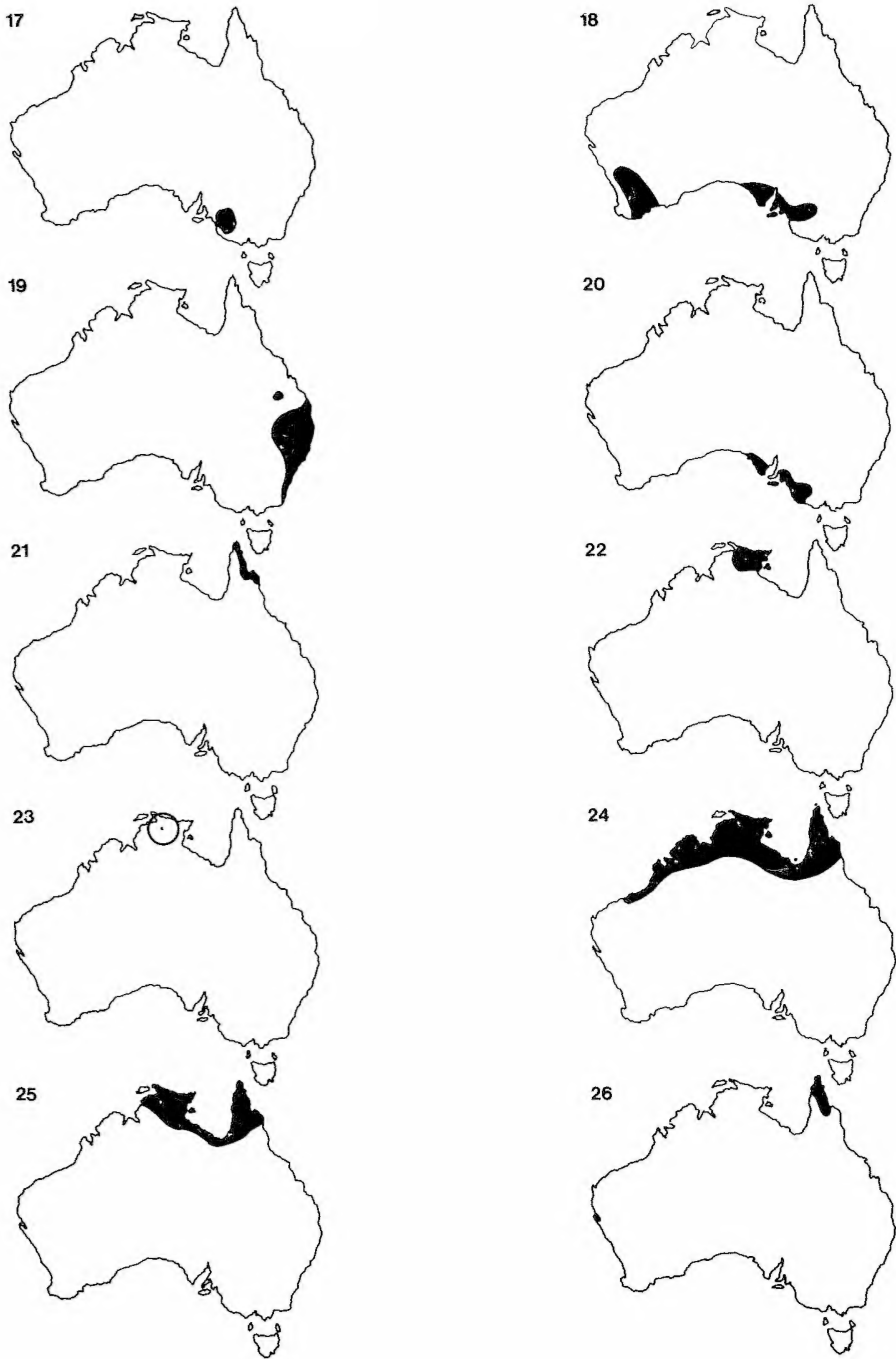
**Selected specimens.** Western Australia: 5 miles [8 km] SE of Gordon Downs Station, Jul 1949, *Perry* 2460 (BRI). Northern Territory: 20.2 miles [32 km] NW of The Granites, May 1958, *Chippendale* NT 4268 (BRI); 22.1 miles [35 km] E of Frewina, Apr 1948, *Perry* 671 (BRI). Queensland: Gregory North District: Oban Station near Woodend Bore, Dec 1947, *Everist* 3340 (BRI).

Mueller gave “Ad flumina Victoria et Fitzroy River” as the type locality. “Fitzroy” was a mistake for “Fitzmaurice”.

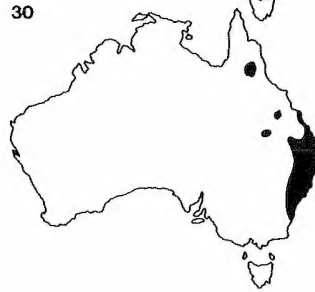
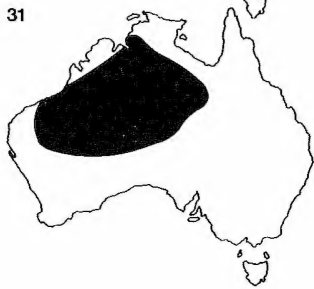
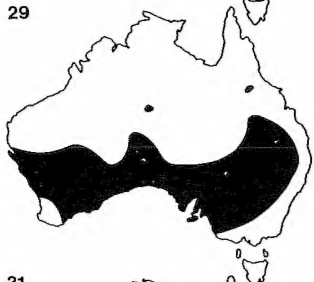


**Maps 7.** *Melaleuca hypericifolia*. 8. *M. linariifolia*. 9. *M. squarrosa*. 10. *M. biconvexa*. 11. *M. halmaturorum*. 12. *M. cheelii*. 13. *M. tortifolia*. 14. *M. gibbosa*. 15. *M. decussata*. 16. *M. densispicata*.





Maps 17. *Melaleuca wilsonii*. 18. *M. acuminata*. 19. *M. thymifolia*. 20. *M. neglecta*. 21. *M. angustifolia*. 22. *M. magnifica*. 23. *M. arnhemica*. 24. *M. acacioides*. 25. *M. symphyocarpa*. 26. *M. brassii*.



Maps 27. *Melaleuca cornucopiae*. 28. *M. glomerata*. 29. *M. uncinata*. 30. *M. nodosa*. 31. *M. lasiandra*.